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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,896	12/17/2003	Boris A. Maslov	544092000124	4040
25227	7590	09/21/2005	EXAMINER	
MORRISON & FOERSTER LLP 1650 TYSONS BOULEVARD SUITE 300 MCLEAN, VA 22102			COLON SANTANA, EDUARDO	
		ART UNIT	PAPER NUMBER	
		2837		

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/736,896	MASLOV ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Eduardo Colon Santana	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 August 2004 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/17/03; 8/25/04; 3/23/2005
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

Art Unit: 2837

**DETAILED ACTION*****Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 12/17/2003; 8/25/2004 and 3/23/2005 are in compliance with the provisions of 37 CFR 1.97. However, the information disclosure statements are being considered in part by the examiner, because they fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

***Drawings***

2. The replacement sheets of drawings were received on 8/25/2004.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "All the reference characters of figures 6, 7, 8 and 10 are omitted in the specification". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date

Art Unit: 2837

of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The disclosure is objected to because of the following informalities: In page 3, lines 5-15, the spacing of the lines of the specification is such as to make reading difficult. Lines should be of 1½ or double spaced.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-5 attempt to define the subject matter in terms of a result to be achieved, which merely amounts to a statement reciting a motor having a torque density of at least 20 Nm/kg, without providing the technical features necessary for achieving this result.

Art Unit: 2837

Moreover, 37 CFR. 1.75 quotes:

b) More than one claim may be presented provided they differ substantially from each other and are not unduly multiplied.

6. Claims 1-5 are rejected, where, in view of the nature and scope of applicant's invention, applicant presents an unreasonable number of claims, which are repetitious and multiplied, the net result of which is to confuse rather than to clarify. The different breadth of each independent claim does not justify the unduly multiplicity of the independent claims. In the present application, it appears appropriate to include a single independent apparatus claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner

Art`Unit: 2837

presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent No. 6,278,216 and Mongeau U.S. Patent No. 5,917,295, and further in view of UQM Technologies.

Referring to claims 1-5, Li discloses a vehicle motor for a motor bicycle having two wheels and one in-wheel electric motor, (see all figures and respective portions of the specifications). Li further discloses that the electric motor includes a stator (4) and rotor (3), wherein the stator comprises a plurality of stator core elements (42B) being arranged in groups, being associated with a corresponding one of the phases of the electric motor. Additionally, Li clearly depicts from figure 8 and 10, that each of the groups being structurally separated and magnetically isolated and separated from other groups. However, even though Li discloses a controller (see figure 12), he does not explicitly describe the controller controlling the electrical flow on each group being independently controllable of each other phase. On the other hand, Mongeau disclose an improved motor drive system having a plurality of series connected H-bridges (see figures

Art Unit: 2837

1, 7 and respective portions of the specification), wherein each phase of the motor is controlled independently of each other.

Since Li et al. and Mongeau are in the same field of endeavor, the purpose disclosed by Mongeau would have been recognized in the pertinent art of Li.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have each phase controlled independently of each others phase by a controller as taught by Mongeau within the teaching of Li for the purpose of reducing switching losses and to reconfigure each motor phase winding at various operating modes, optimizing the speed of the motor at different loads (dynamic selection) to increase efficiency.

On the other hand, even though Li and Mongeau are silent on the torque-to-weight ratio (20 Nm/kg), this design parameters is an obvious implementation in the structure of the motors being used. UQM Technologies shows a variety of motors being used on vehicle propulsion systems in which the torque-to-weight ratio differ from one motor to another in accordance with the speed, voltage and/or other variables require to operate at desire efficiency.

It would have been an obvious matter of design choice to one having ordinary skill in the art at the time the invention was made to claim a specific torque-to-weight ratio, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 2837

Referring to claim 6, Li addresses the similar limitation of claim 1 above regarding an in wheel motor with each of its electromagnetic circuit (42B) being sufficiently isolated (see figures 8 and 10).

Referring to claim 7, Li discloses an in-wheel motor that moves a vehicle as shown in figure 3 and described in claim 1 above. Additionally Li mentions the use of a motor control system (figure 12) having a processor (MPU) which obviously would be dynamically adapted to any user inputs (i.e. speed, brake); any operating conditions (i.e. temperature) and any operating parameter (i.e. torque, current, voltage).

**Conclusion**

8. The prior art made of record in form 1449 and not specifically relied upon is considered pertinent to applicant's disclosure to further show the state of art.

9. See in addition JP 10305735 and JP 03031029 that mention two type of electric motors mounted in an in-wheel and direct-drive manner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Colon Santana whose telephone number is (571) 272-2060. The examiner can normally be reached on Monday thru Thursday 6:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Martin can be reached on (571) 272-2800 X.37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2837

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ECS

September 15, 2005



MARLON T. FLETCHER  
PRIMARY EXAMINER